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ABSTRACT

In response to a statewide call for a review of general education in Virginia community colleges, the Student Assessment Committee (SAC) was formed at John Tyler Community College (Virginia) to evaluate student outcomes for the college's general education component. After concluding that standardized tests did not provide an adequate measure, the SAC decided to focus on the evaluation of students' critical thinking skills as a measure of college success. A flow chart for interviewing students to determine their critical thinking capabilities was developed based on the following elements of critical thought: (1) identifying the problem; (2) stating the problem; (3) interpreting facts which must be known to solve the problem; (4) posing a possible answer; (5) developing an applicable solution from the answer; and (6) applying the solution to similar problems. Interviews were conducted with 47 of 100 associate degree candidates for graduation in 1993 which identified students by program and noted differences in critical thinking levels. The flow chart strengths include the tangible character of the model, which allows interviewers to physically see relationships of thought, while weaknesses include the possibility that the structure may be difficult to change if evidence suggests it is no longer appropriate. The SAC plans to further clarify the model and expand interviewing in the future. Flow charts and SAC members are included. (BCY)

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A MODEL FOR

ASSESSING CRITICAL THINKING SKILLS

Presented by the John Tyler Community College
Critical Thinking Subcommittee

at the

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A MODEL FOR ASSESSING CRITICAL THINKING SKILLS

General education is receiving critical attention in Virginia due to the statewide assessment initiative mandated in 1987 by the Virginia General Assembly and coordinated by the State Council of Higher Education of Virginia. In 1989, the Chancellor of the Virginia Community College System (VCCS) called for a system-wide review of general education by establishing the General Education Task Force. This 26-member group reflected a broad representation from community colleges across the state. The Task Force defined general education as *that portion of the collegiate experience which addresses the knowledge, skills, attitudes, and values characteristic of educated persons*. The associate degree programs within the Virginia Community College System support a collegiate experience which focuses on the following eight general education elements or outcomes:

Communication
Learning skills
Critical thinking
Interpersonal skills and human relations
Computational and computer skills
Understanding culture and society
Understanding science and technology
Wellness

Colleges were provided with a framework within which to develop their general education goals and objectives. The Task Force believed that the general education outcomes could be addressed in a variety of ways, such as: (1) learning attained in traditional general education courses; (2) learning attained in interdisciplinary studies; (3) learning embedded in specialized courses; and (4) extracurricular learning as part of a total collegiate experience. These outcomes could be evaluated effectively through each college's student assessment program (VCCS, 1990).

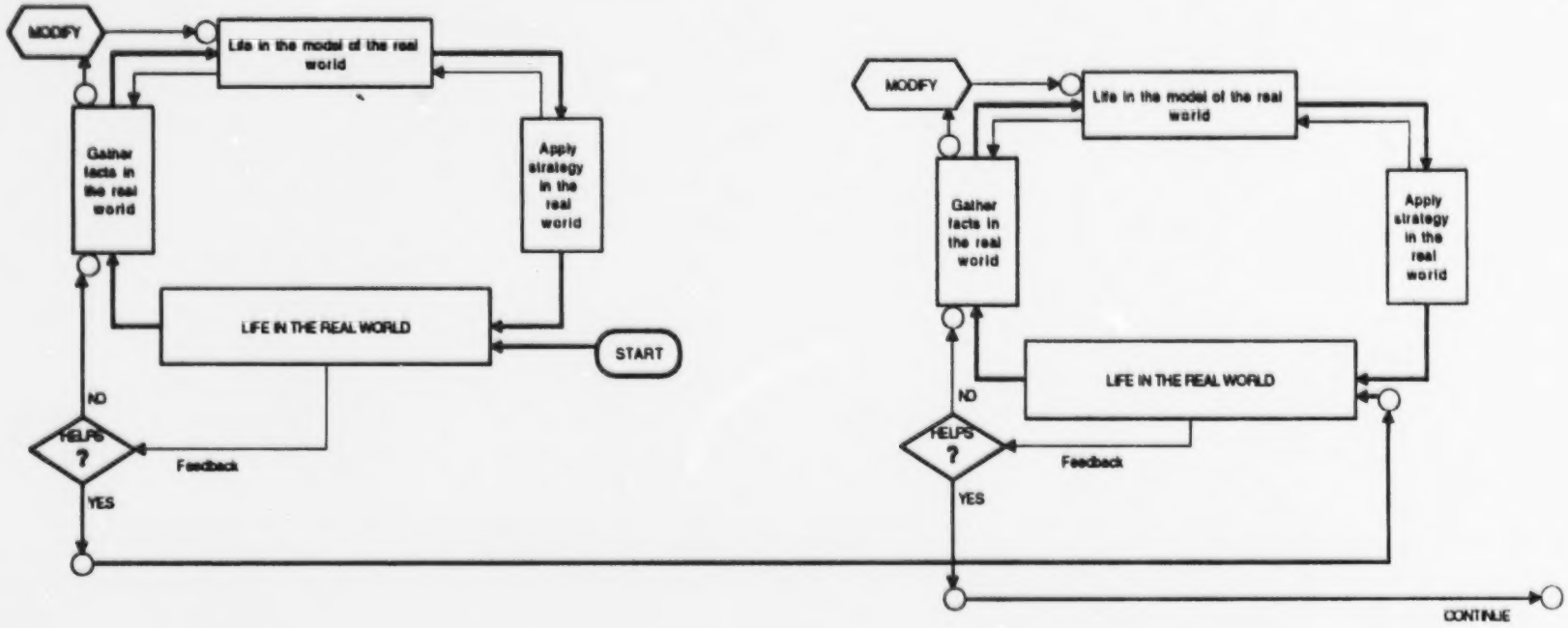
The Student Assessment Committee at John Tyler Community College is comprised of teaching faculty and key administrators. Committee members attempted to use a variety of standardized tests to measure graduates' skill level for the eight general education outcomes. After several years of testing, faculty questioned how the test results could be translated into useable information in terms of what is learned in the classroom. Committee members reviewed test contents and results, and came to the conclusion that there was not a substantial relationship between standardized tests and their local classroom activities.

Committee members began discussing alternatives to using standardized tests. Some expressed an interest in studying the specific general education elements. After a number of meetings, *critical thinking* emerged as the outcome they felt should be addressed immediately. A subcommittee of the Student Assessment Committee created a process for evaluating the college's influence in the development of its students' critical thinking skills. Group discussions concentrated on two processes: (1) generalizing cognitive behavior in a manner that is non-subject matter specific, and (2) designing a process whereby critical thinking skills in students could be evaluated.

The category of cognitive behaviors considered to reflect critical thinking focused on *problem solving*, which the group defined in a *general* sense, not necessarily in the analytical or mathematical sense. The position that *all critical thinking is problem solving* was accepted tentatively, in the interest of moving forward with the subcommittee discussions.

In Figure 1, a simple diagrammatic model is used to illustrate the critical thinking process. The two critical thinking loops suggest progress through a thought process, the essence of which is captured by the element which designates the thinker's view of the real physical world in terms of concepts and ideas. This world view must be an individual's own

Figure 1 **Dynamic Critical Thinking Loop**



This model is dynamic in the sense that it describes a problem solving process which takes place against a philosophical and experiential background that keeps changing. It describes a system that is learning, as it functions.

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recreation of physical reality, in terms of these concepts, since it exists only in the individual's mind.

The subcommittee agreed to conduct personal interviews with a random sample of associate degree candidates for graduation to ascertain their ability to think critically. As illustrated in Figure 2, the thinking process includes the following steps:

1. Identifying a problem which needs to be solved. (Evidences awareness of a problem.)

2. Stating the problem. (Able to identify components which create tension.)

3. Interpreting facts which must be known to solve the problem. (Identifies a number of relevant and accurate facts.)

4. Proposing a possible answer to the problem. (Evidences ability to compare and identify unifying themes.)

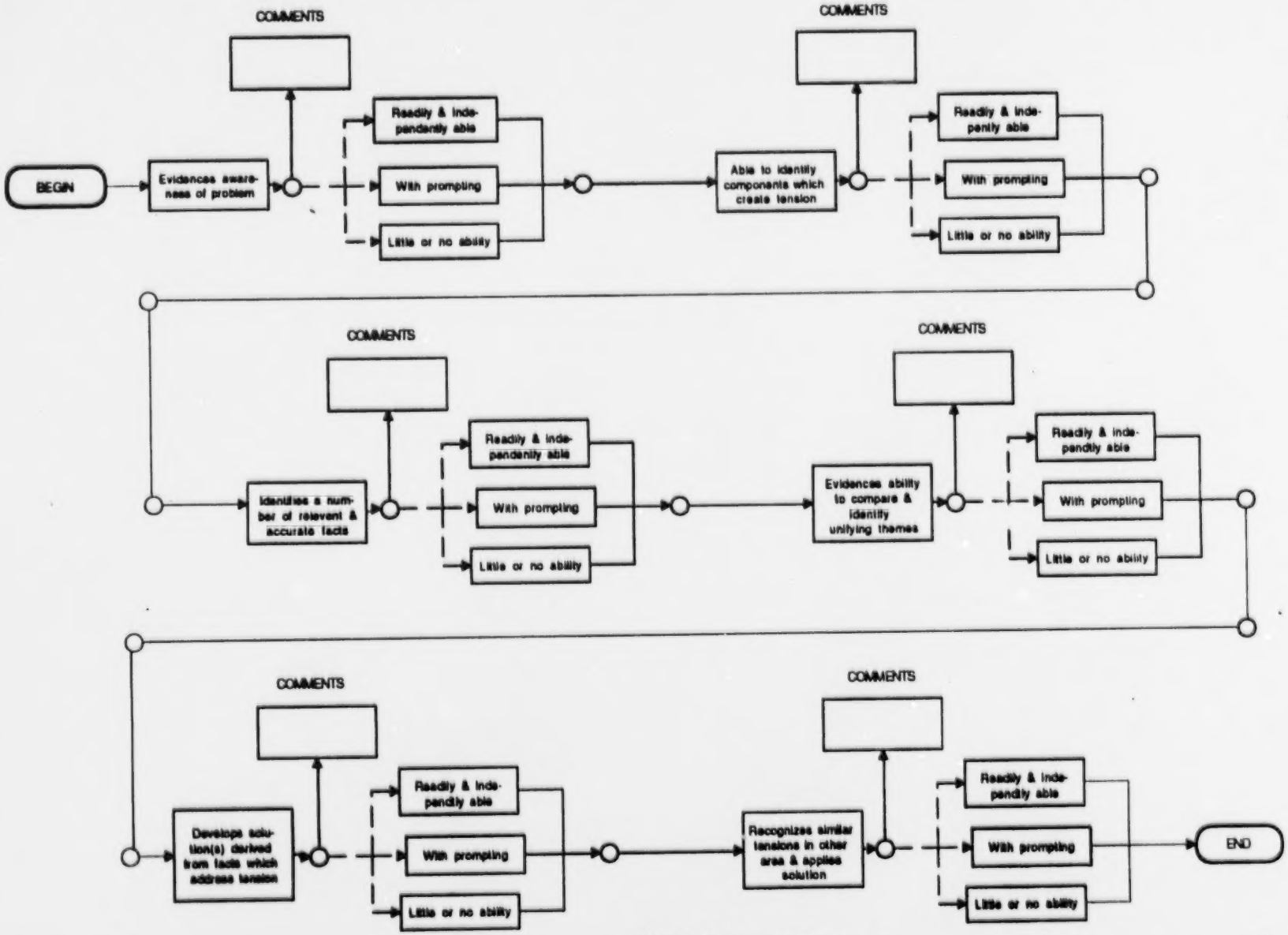
5. Developing an applicable solution from the answer. (Develops solution(s) derived from facts which address tension.)

6. Stating how the solution to the problem could be used to solve other similar problems. (Recognized similar tensions in other areas and applies solution.)

The flowchart (Figure 2) is used to guide participants through the interview process. Each step listed above is marked on the flowchart to show the student's anticipated thinking process. During 1993, 47 out of 100 selected students were interviewed by six members of the subcommittee. Students were identified by their program of study, and a number of notable differences were observed in their thinking ability. Additional analyses using a larger sample of students are underway. For 1994, the process will be expanded to include 200 students, with approximately 20 faculty and administrators serving as interviewers.

The model's strengths and difficulties include the nature of the dynamic critical thinking loop, and the overlapping of the tangible and intangible character of the model. The tangible character is its visible shape--boxes connected to other boxes with lines showing

Figure 2 Interview Flowchart



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specific positional relationships and sequencing priorities among them. The tangibility can create difficulty however, if once fashioned, one cannot change the structure when evidence suggests that structure is inappropriate. An intangible strength lies in the model's subjective interpretation during the interview process. This individual approach allows flexibility in the process which is needed to accommodate diversity in communication and thought. The meaning of a message must always be interpreted against the background of one's own past experiences. This strength gives rise to an important difficulty--the interviewer's inability to gather concrete evidence concerning the interview process.

From this model, a strength can evolve into a difficulty, as can a difficulty evolve into a strength. This evolution occurs at specific stages of development and configuration. Throughout the development process the situation changes, which allows one to not be discouraged by an insurmountable difficulty.

The diagrammatical model invites further study. It begs for further clarification, which will certainly be forthcoming, since an interesting but manageable problem attracts thoughtful minds. The model's diagrammatic style is amenable to computer algorithm, opening the way for computer assisted information gathering or diagnostic purposes.

Finally, members of the subcommittee are excited about taking the initial step in creating a generalized model for a critical thinking process, the essence of which transcends subject matter expertise. The group will continue to pursue this difficult but interesting problem.

Members of the John Tyler Community College Critical Thinking Subcommittee:

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